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Goertz

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(54) **ON A SUBSTRATE FORMED OR RESTING
DISPLAY ARRANGEMENT**

(75) Inventor: **Magnus George Goertz**, Lidingo (SE)

(73) Assignee: **Neonode Inc.**, Santa Clara, CA (US)

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(65) **Prior Publication Data**

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(51) **Int. Cl.**
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(52) **U.S. Cl.** **345/175**; 178/18.09

(58) **Field of Classification Search** 345/173–178;
178/18.01–18.11

See application file for complete search history.

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Primary Examiner — Bipin Shalwala

Assistant Examiner — Steven Holton

(74) *Attorney, Agent, or Firm* — Soquel Group LLC

(57) **ABSTRACT**

A touch screen apparatus, including a display unit including a touch surface, a number of light pulse emitting units, connecting to the display unit, for emitting light pulses over and across the touch surface, a number of light pulse receiving units, connected to the display unit, for measuring amounts of light received from the light pulse emitting units, circuitry, connected to the light pulse emitting units and to the light pulse receiving units, for selectively activating, at any given time, one or more of the light pulse emitting units and the light pulse receiving units, wherein the circuitry activates three or more light pulse emitting units and only one light pulse receiving unit during a designated time interval, and a calculating unit, connected to the light pulse receiving units, to determine the location of an object touching the touch surface, based on the measured amounts of light received at the receiving units.

6 Claims, 5 Drawing Sheets

